

U.S. Patent Application No. 10/649,348
Amendment dated June 17, 2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Original) A method for determining a rheological master curve for a composition comprising a filler in a matrix, wherein the method comprises the steps of:

- a) determining the work of adhesion of the matrix to the filler;
- b) determining the work of cohesion of the filler;
- c) determining the difference between the work of cohesion and the work of adhesion;
- d) measuring a rheological property of the composition; and
- e) correlating the rheological property to the difference between the work of cohesion and the work of adhesion.

2. (Original) The method of claim 1, wherein the steps of determining the work of adhesion and of determining the work of cohesion comprises the steps of:

- a) determining the contact angles of the filler based on one or more probe fluids;
- b) determining the surface energy components for the filler based on the measured contact angles of the filler;
- c) determining the contact angles of the matrix based on one or more probe solids; and

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d) determining the surface energy components of the matrix based on the measure contact angles of the matrix.

3. (Original) The method of claim 1, wherein the rheological property is yield point, viscosity at a defined shear rate, or the ratio of the change in viscosity to change in shear rate.

4. (Original) The method of claim 3, wherein the rheological property is yield point.

5. (Currently amended) A rheological master curve for a composition comprising a filler in a matrix, obtained by the method of claim 1, wherein the master curve correlates i) the difference between the work of cohesion of the filler and the work of adhesion of the matrix to the filler; and ii) a rheological property of the composition.

6. (Currently amended) A The rheological master curve for a composition comprising a filler in a matrix, wherein the master curve correlates i) the difference between the work of cohesion of the filler and the work of adhesion of the matrix to the filler; and ii) a rheological property of the composition of claim 5, wherein the rheological property is yield point, viscosity at a defined shear rate, or the ratio of the change in viscosity to change in shear rate.

7. (Original) The rheological master curve of claim 6, wherein the rheological property is yield point.

8. (Original) A method of predicting a value for a rheological property of a composition

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comprising a filler in a matrix, wherein the method comprises the steps of:

- a) determining the work of adhesion of the matrix to the filler;
- b) determining the work of cohesion of the filler;
- c) determining the difference between the work of cohesion and the work of adhesion; and
- d) correlating the difference between the work of cohesion and the work of adhesion to the value for the rheological property using the rheological master curve of claim 5.

9. (Original) The method of claim 8, wherein the rheological property is yield point, viscosity at a defined shear rate, or the ratio of the change in viscosity to change in shear rate.

10. (Original) The method of claim 9, wherein the rheological property is yield point.

11. (Currently amended) A method of choosing a target filler to achieve a desired value of a rheological property of a composition comprising the target filler in a matrix, wherein the method comprises the steps of:

- a) determining the surface energy components for several probe fillers;
- b) measuring the rheological property of a composition comprising one probe filler and the matrix;
- c) correlating the rheological property of the composition comprising the probe filler and the matrix to a difference between the work of cohesion of the

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probe filler and the work of adhesion of the matrix to the probe filler using the rheological master curve of claim 5;

- d) repeating steps b) and c) for each probe filler;
- e) calculating the surface energy components of the matrix using the correlated difference of step c) and the surface energy components of the probe fillers of step a);
- f) correlating the desired value of the rheological property of the composition comprising the target filler in the matrix to a difference between the work of cohesion of the target filler and the work of adhesion of the matrix to the target filler using the rheological master curve of claim 5;
- g) choosing the target filler having the surface energy components which, when used to calculate the work of cohesion of the target filler and the work of adhesion of the matrix to the target filler, gives a difference which is similar to the correlated difference of step f).